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Abstract

This paper revisits the issue of law enforcement and the design of monetary sanctions when the public law enforcer's incentives depart from those of a benevolent authority, which is the most frequent assumption made in the literature on crime deterrence. We first consider the case of an elected enforcer. We find that when the harm generated by offenses is quite small relative to the average private benefits, equilibrium with weak enforcement/low sanction prevails. Instead, when the harm generated by offenses is high relative to the average private benefits, it is the equilibrium with strong enforcement/high sanctions that prevails. Therefore, we provide an explanation for the empirical puzzle highlighted by Lin(2007): elected enforcers punish major (minor) crimes more (less) severely than the benevolent social planer. The case of an appointed enforcer prone to rent seeking is also considered. The monetary sanction under rent seeking is closer to the utilitarian level, as compared with the one under election.

Keywords : law enforcement, deterrence, monetary sanctions, punishment, electoral competition, democracy, rent seeking, dictature.
JEL classification codes : D72, D73, H1, K14, K23, K4.

1 Introduction

As compared with autocratic or dictatorial regimes, the specificity of the design and enforcement of criminal law[1] in democratic countries relies on the fact that they both come out from the decision process of an elected enforcer. The public enforcer (the State – the Government, the Parliament – sometimes the Town Council) determines the level of sanction (with a margin of discretion left to judges) and the means devoted to the offenders' detection, apprehension and conviction. Therefore, a realistic view of the law enforcer is to consider that her/his decisions regarding the level of sanction and the means given to the police might be influenced by the citizens' preferences. The implicit assumption behind this statement is that the elected law enforcer has proposed and enforced a platform which has won the support of the majority of the voters. In other words, the candidate has incentives to propose a policy which enables her/him to win the election. This issue has not received much attention in the law & economic literature, which is quite surprising since the debate regarding the way in which citizens' individual preferences may be revealed has long ago expanded beyond social choice theory. Moreover, regarding the debate about the roles and objectives of the penal code, both the proponents of the utilitarian approach (Becker, 1968; including the precursors Beccaria, 1764; Bentham, 1789) or its critics (Dau-Schmidt, 1990; Lewin and Trumbull, 1990; Stigler, 1970) have insisted on the role played by social norms and social preferences, thus linking the design of the sanctions to ethical and moral considerations that, at a given moment, are shared and must be consolidated in the social group.

On *a priori* grounds, it is not so easy to predict in which way social preferences and the election process may influence the design of the penal code – beyond the basic distinction between what is seen as legal and illegal behaviors. Very few attempts have been made in order to verify empirically whether differences arise in criminal law enforcement policies according to the level and quality of democracy. Lin (2007) uses an index of political liberty from the comparative freedom survey to distinguish "low democracies" from "high democracies"; he shows that countries characterized by a higher level of democracy tend to punish major crimes more severely as compared to countries with a low level of democracy, the reverse being true for minor crimes. More precisely, the deterrence of homicides is quite strong[2] and the homicide rate lower in high democracy by comparison with low democracy. On the contrary, it seems that democracy has a negative impact on less serious crimes such as burglary, robbery, car theft. However, no explanation of such an empirical result has been yet provided. This paper addresses this issue, in a framework where both the lawmaking process and the control of undesirable behaviors are endogenous. Here, the lawmaking

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[1]Note that we have a broad definition of what the penal code is, encompassing both criminal and administrative laws. We are aware of existing criticisms against this approach (Dau-Schmidt, 1990; Lewin and Trumbull, 1990). Note also that the sentencing guidelines in the United States were determined in 1984 by a commission (Reinganum, 2000); the United States Sentencing Commission. This commission is an independent agency in the judicial branch of the government.

[2]According to multiple criteria: average prison length, average clearance rates.

process is limited to setting the monetary sanction. The paper focuses on two kinds of public institutions, widely spread in democratic countries, which may have some power in the setting of appropriate sanctions: they result either from the electoral process, in the case of political competition, or from the decisions of an appointed bureaucrat, in the regulatory case.

The issue on whether/how political market and electoral competition impact policy choices has been largely investigated regarding judicial decision making, both theoretically (Epstein 1990, Hanssen, 1999, Klerman and Mahoney, 2005, La Porta et al. 2004) and empirically (Blanes i Vidal and Leaver 2011, Hanssen 2004, Schneider 2005). Interestingly enough, Matsuaka (2010) has provided empirical evidence that congruence is higher when judges must stand for reelection. The empirical literature has also documented the influence of the electoral cycle on the orientation of public policies against criminality. Levitt (1997) uses the increase in policemen recruitments before the elections as an instrument to evaluate the relevance of Becker's deterrence theory. Dyke (2007) shows that the district attorneys are less likely to dismiss cases in the election year. Berdejó and Yuchtman (2012) present evidence that elected judges (in the State of Washington) tend to respond to political pressure by increasing the severity of their judgment: sentences are around 10% longer at the end of a judge's political cycle than at the beginning. In the case of Argentina, Meloni (2012) showed that incumbent governors dedicate additional efforts in election years in order to get short-run improvements in crime indicators. Public choice literature has also recognized the importance of taking into account the incentives of the bureaucrats and politicians in charge of public policy (Alesina and Tabellini 2007) as well as the principal agent literature (Maskin and Tirole 2004). More specifically, Alesina and Tabellini (2007) investigate the choice between giving a policy task to bureaucrats (guided by career concerns) or to politicians (guided by reelection concerns), focusing on the ability to perform a task and therefore explaining the delegation of highly technical tasks to agencies.

In contrast, the law enforcement economic literature stemming from Becker's (1968) seminal article has largely ignored the incentives of enforcers, with the exception of corruption. The public enforcer is indeed generally considered as either benevolent or corrupted[3], with the exception of Becker and Stigler (1974). Between these two extremes lies a range of situations where the enforcer is merely (as any other agent) self interested, as argued[4] by Friedman (1999). Building on this statement, Garoupa and Klerman (2002) developed a model of a rent seeking government[5], that is a government which seeks to maximize the revenues minus the harm to the government and the cost of law enforcement.[6] Rent seeking seems indeed clearly relevant to consider the case of dictatorship,

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[3] See the survey on corruption by Bowles (2000), and on the economics of crime by Eide *et al.* (2006).

[4] See also the empirical analysis of Glaeser *et al.* (2000).

[5] See also Gradstein (1993), for an analysis of the impact of a rent seeking government for the provision of public goods.

[6] This issue of self interest has been raised for judges' decision making notably by Epstein (1990).

or the case of an independent agency.

Our paper deals also with the issue highlighted by Friedman (1999) regarding law enforcers' incentives. The literature about law enforcement considers criminals as highly sophisticated and rational individuals, while the State is usually considered as a simple « proxy » (benevolent automat) or[7] « a wise, benevolent and wholly altruistic organization ». However, as Friedman emphasized, societies do not generally choose the most efficient way to enforce law in practice. One explanation lies with the incentives of the law enforcers; they wish to maximize their own rents rather than the social welfare, thus departing from the socially optimal solution of the literature. Our general point in the paper is in the same spirit as Friedman's, in the sense that we analyze situations where the law enforcer's incentives may reflect the general institutional context where the enforcer operates; thus these incentives may be shaped by specific institutions such as the existence of statutes (when the enforcer is a regulatory agency) or through the influence of political/social pressures (when the enforcer is the State).

Finally, our paper is a contribution to the analysis of cases where public authorities' preferences might diverge from benevolence, and to analyze the consequences for the design of the penal code and the level of deterrence. We analyze the effects of the political market on the design of public policies in the area of crime deterrence, introducing a basic model of electoral competition. We focus on electoral strategies based on a policy against criminality, and which allow candidates to maximize their chances to win the elections. Our aim is to discuss in a simple framework whether/how democracy and political competition may promote the toughness of the sanctions in the various domains of the penal law. Then we compare the case of a utilitarian public authority with the case of a rent seeking enforcer. Garoupa and Klerman (2002) and Dittman (2004) also analyze law enforcement and the choice by a rent seeking authority, but assume that sanctions are exogenously set. This framework can represent an independent agency regulating a sector as the enforcer does not fear not to be reelected. To some extent, this framework represents also the case of dictatorship. Therefore, our paper provides a detailed analysis of deterrence with an elected versus an appointed law enforcer.

The paper is organized as follows. Section 2 sets the general framework. and recall the results obtained in the standard beckerian approach relying on a benevolent planer in order to define our benchmark. Section 3 analyzes the case where the public enforcer is elected with a simple model of Downsian electoral competition. Section 4 develops the case of rent seeking government. Section 5 compares the different cases and section 6 concludes.

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[7] Cf Friedman, 1999, p. 262.

2 The general framework

We introduce here our basic framework, which elaborates on the model of law enforcement *à la* Becker[8]. Let us consider the case where the illegal activity allows the (risk neutral) criminal to benefit from b which will be called the type of the criminal. Public authorities do not observe the type b, but only know that it is distributed according to the uniform law on $[0, B]$. The (external) loss/harm to the rest of the society in case of crime is h, whatever the private benefit for the criminal[9], with the following assumption:

Assumption 1. $B > h$

Monitoring the criminal activity entails a cost for public authorities, equal to $m(p)$, where for the sake of simplicity p is the probability of control (encompassing apprehension, conviction and punishment for an illegal behavior). As usually in the literature, we assume that this cost is financed through a lump sum tax t plus the expected fine levied on the fraction of the population which is seen as criminal (either for whom the harmful activity entails the harm, or is not deterred from committing the crime).

We focus here on punishment, i.e. the choice of a monetary sanction (penalty or fine) $f > 0$. We assume that the management costs (associated with the monetary penalty) are negligible. We also assume that the maximal fine is the legal wealth of the population w, i.e. $f \in [0, w]$: we consider that w is large enough in order for (almost) all equilibria to be defined as interior solutions. However, we assume that expenditures in the monitoring of criminals' behavior are exogenously set throughout in the paper. Given that p is the probability of control ($0 < p < 1$), it reflects both the action of police (first investigations and apprehension) and justice (complementary investigations, conviction and punishment). p is supposed to be set exogenously in order to focus on the level of sanction[10] f.

As a benchmark, we first focus on the enforcement strategy of the authority when it is assumed to behave according to a perfectly benevolent planner. In this case, the game (or sequence of moves) between the public authority and the citizens is the usual one: after Nature moves (choosing the type of citizens, not observable for public authorities) at stage 0, the authority makes at stage 1 its announcement regarding the level of fine applied; at stage 2, citizens decide whether or not they abide the law; at stage 3, the law is enforced.

2.1 Criminals and honest people

We assume that the cost of a crime hurts citizens through a pure externality term affecting individuals' utility level, with a very simple formulation: $E = qh$,

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[8] See the surveys by Garoupa (1997) and Polinsky and Shavell (2000).

[9] Thus, as usually in the literature, the first best level of deterrence corresponds to the illegal benefit $b = h$ (assuming it can be obtained at a small enforcement cost). Given that the type of the criminals is not observable, it is generally never attainable.

[10] See Dharmapala and Garoupa (2004).

where is $q \in]0, 1[$ the probability of crime. As usual in the literature on crime enforcement, we will show that $q = \int_{\bar{b}}^{B} \frac{1}{B} db = \left(1 - \frac{\bar{b}}{B}\right)$, with $\bar{b}$ the deterrence threshold. Let us denote the utility level of a risk neutral criminal as:

$$
\begin{aligned}
u_c &= w + b - t - pf - E \\
&= w + b - t - pf - \left(1 - \frac{\bar{b}}{B}\right) h
\end{aligned}
$$

while for an honest individual, we have:

$$
\begin{aligned}
u_h &= w - t - E \\
&= w - t - \left(1 - \frac{\bar{b}}{B}\right) h
\end{aligned}
$$

Hence as usual, $\bar{b}$ is defined by $u_c = u_h$; a potential criminal decides to undertake the activity if the benefit he receives from doing it is higher than the expected punishment, i.e. if $b \geq pf = \bar{b}$.

2.2 Benevolent public enforcers

The public budget constraint writes as:

$$
m(p) = t + \left(1 - \frac{\bar{b}}{B}\right) pf \tag{1}
$$

This means that we consider here only balanced-budget policies.

Assume that the policy maker acts as a benevolent planner, and uses a pure utilitarian criterion[11]: the social welfare function is the weighted sum of u_h and u_c given the structure of the population, i.e. the weights are defined by the shares respectively of the honest and criminal populations. This results in the following social function of a benevolent planner:

$$
\begin{aligned}
S &= \frac{1}{B} \int_0^{\bar{b}} u_h db + \frac{1}{B} \int_{\bar{b}}^{B} u_c db \\
&= w - t + \frac{1}{B} \int_{\bar{b}}^{B} (b - pf - h) db \tag{2}
\end{aligned}
$$

and substituting with (1) yields:

---

[11]Since Stigler (1970), the introduction of illegal gains in the social value function is a controversial issue. Both the significance and the objective of the penal code are still in debate among scholars; see Dau-Schmidt (1990) and Lewin and Trumbull (1990); and also more recently Dari-Mattiacci and Garoupa (2007), Fleurbaey, Tungodden and Chang (2003) and Kaplow and Shavell (2001).

$$S = w + \frac{1}{B} \int_{pf}^{B} (b - h)db - m(p) \qquad (3)$$

which is the standard formulation considered in the literature. The first (integral) term of S correspond to the expected private benefit associated with the illegal activity. The last one is the cost of monitoring for public authorities. In the case of an act-based sanction, the fine paid by the criminal when arrested is a mere transfer (the perceived probability of paying the fine, is equal to the perceived probability of collecting it).

Lemma 1 *The social-welfare maximizing sanction is $f_u = \frac{h}{p}$.*
Proof. The derivative of S with respect to f is given by:

$$\frac{\partial S}{\partial f} = -(\bar{b} - h)p = (h - pf)p$$

implying that $\frac{\partial S}{\partial f}_{|f=0} > 0$, and thus $f > 0$. Hence, assuming that $\frac{\partial S}{\partial f}_{|f=w} < 0 \Leftrightarrow h - pw < 0 \Leftrightarrow h < h_1 \equiv pw$, and solving the F.O.C. for the optimal sanction f_u yields:

$$f_u = \frac{h}{p}$$

which leads to the first best level of deterrence h. The associated cumulative probability of crime is $q = 1 - \frac{pf_u}{B} = 1 - \frac{h}{B}$. ∎

3   Punishment when the public enforcer is elected

In this section, we depart from the usual assumption that the enforcer is benevolent. We introduce a simple model of electoral competition in the vein of the framework known as Downsian model (see Downs, 1957, Persson and Tabellini, 2000).

Assume there exist two candidates $i = 1, 2$ representative of two political parties, competing for national (presidential or legislative) or local (municipal) elections. Competing for elections here is alike a rent seeking contest, where V, the exogenous rent obtained in case of victory is attached to holding offices, ministries and so on. Thus, we do not consider the case of opportunistic politicians, responding to lobbies pressures or adopting Leviathan behavior (following strategies of capture).

An electoral campaign or platform f consists in setting the monetary sanction. The objective of politician i is to maximize the expected value of the rent $\theta_i V$, where θ_i is the probability that he wins the elections. To this end, candidate i proposes to electors an electoral platform f_i. We consider the (simple) majority rule for voting. All citizens are electors and do participate: each voter

simply votes for the candidate whose platform allows him to reach the highest utility level, and if he is indifferent, he tosses a coin to decide for whom he votes.

Let us denote as $n(f_1) = n_1 \in [0,1]$ the proportion of the population voting for candidate 1. Then the probability that candidate 1 wins the elections can take three values:

$$\theta_l = \begin{cases} 0 & if & n_1 < 1 - n_1 \\ \frac{1}{2} & if & n_1 = 1 - n_1 \\ 1 & if & n_1 > 1 - n_1 \end{cases}$$

The electoral competition game between the candidates and the citizens/voters is as follows: after Nature moves at stage 0 (choosing the type of citizens, not observable for politicians), the electoral competition begins at stage 1, which is a simultaneous move (non cooperative) game between the candidates, where they both choose and announce their platforms (f_1), (f_2), both satisfying the balanced budget constraint (1); at stage 2, elections take place, and citizens simultaneously choose between the two candidates[12]; at stage 3, the elected candidate implements his policy[13] – it becomes a law; at stage 4, citizens choose to abide or not the law; at stage 5, law is enforced.

In the appendix, we prove the next result, where f_h (f_c) sets for the choice of sanction by the honest (respectively, criminal) population:

Proposition 1 *Under electoral competition, three cases must be distinguished:*
i) The "strong enforcement" equilibrium: If $h > \frac{B}{2}$, then the unique equilibrium is such that both candidates announce the monetary sanction $f = f_h \equiv \frac{1}{2}\left[\frac{h}{p} + \frac{B}{p}\right]$, and each candidate wins the elections with probability $\frac{1}{2}$. The probability of crime is $q = \frac{1}{2}\left[1 - \frac{h}{B}\right] < \frac{1}{4}$.
ii) The "weak enforcement" equilibrium: If $h < \frac{B}{2}$, then the unique equilibrium is such that both candidates announce the monetary sanction $f = f_c \equiv \frac{1}{2}\frac{h}{p}$, and each candidate wins the elections with probability $\frac{1}{2}$. The probability of crime is $q = 1 - \frac{1}{2}\frac{h}{B} > \frac{3}{4}$.
iii) The multiple equilibria: If $h = \frac{B}{2}$, there exist four equilibria[14], either symmetric or asymmetric; i.e. the next four profiles of strategies are equilibria of the electoral game: candidate l announces f_h, and candidate r announces f_c; candidate l announces f_c, and candidate r announces f_h; both candidate l and candidate r announce f_h; both candidate l and candidate r announce f_c. In all of these equilibria, each candidate wins the elections with probability $\frac{1}{2}$. When f_h is implemented, the probability of crime is $q = \frac{1}{4}$; but when f_c is implemented, the probability of crime is $q = \frac{3}{4}$.

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[12] Every citizen votes, anticipating their future behavior, i.e. whether they will behave as honest people or criminals.

[13] i.e., we assume that candidates commit to their own electoral platform – without specifying the reasons explaining neither why those platforms are credible announcements, nor how they become a law. These (obviously important) issues are beyond the scope of the paper.

[14] Note that we focus only on pure strategies equilibria.

It is easy to check that the monetary sanction is higher in the "strong enforcement" equilibrium and the proportion of criminals lower in the "weak enforcement" equilibrium.

The prevailing equilibrium depends crucially on the level of the harm relative to the maximal private benefit of crime. In the case where the harm done to society h is higher than the average private benefit $\frac{B}{2}$[15], the "strong enforcement/low level of crime" equilibrium prevails. At this point, the honest people represent the majority of the voters. Therefore, both candidates have incentive to propose the same platform, which maximizes the benefits of those citizens. On the contrary, when the harm h is weaker than the average private benefits $\frac{B}{2}$, the "weak enforcement/high level of crime" equilibrium emerges.

4 Punishment when the public enforcer is rent seeker

Let us consider now the case where the public enforcer is rent seeker, such as in a non democratic government (as suggested in Garoupa and Klerman, 2002), or an independent agency which is able to keep the fines it sets.[16] This situation can be characterized as the case of "appointed law enforcer".

In order to discuss this point in a very simple framework, let us assume now that an appointed public enforcer sets the level of sanctions, in order to maximize the rent (i.e. pure capture):

$$
\begin{aligned}
R &= \frac{1}{B} \int_{pf}^{B} (pf - \alpha h) db - m(p) \\
&= \left(1 - \frac{pf}{B}\right)(pf - \alpha h) - m(p) \tag{4}
\end{aligned}
$$

with $R > 0$, and where $\alpha \in]0, 1]$ represents the share of the harm that may hurt directly the appointed law enforcer, that is the agency (Garoupa and Klerman, 2002). The next proposition highlights the main implications:

Proposition 2 *Sanctions with rent seeking. The rent maximizing sanction is $f_r = \frac{1}{2}\left(\frac{\alpha h}{p} + \frac{B}{p}\right)$, and is associated with a probability of crime equal to $q_r = \frac{1}{2}\left(1 - \frac{\alpha}{B}h\right)$.*

---

[15] Recall than the distribution of the private benefits is uniform over $[0, B]$, and therefore $\int_0^B \frac{b}{B} db = \frac{B}{2}$.

[16] In practice, the enforcement of many public regulations is delegated to (public, private or mixed) agencies, whose agents are not elected by citizens. These agents may be civil servants or employed under private contracts, but they are endowed with the power to monitor the activity of citizens and to set the penalties in case where infractions are detected (the fine is legally capped).

Proof. The derivative of R relative to f is:

$$\frac{\partial R}{\partial f} = 1 + \frac{\alpha}{B}h - 2\frac{p}{B}f$$

implying that $\frac{\partial R}{\partial f}_{|f=0} > 0$, hence $f > 0$. Assuming that $\frac{\partial R}{\partial f}_{|f=w} < 0 \Leftrightarrow h < h_2 \equiv 2\frac{p}{\alpha}w - \frac{B}{\alpha}$, and solving the FOC for the optimal sanction f_r yields:

$$f_r = \frac{1}{2}\left(\alpha\frac{h}{p} + \frac{B}{p}\right)$$

Assessing the level of deterrence, we obtain that the probability of crime is $q_r = 1 - \frac{pf_r}{B} = \frac{1}{2}\left(1 - \frac{\alpha}{B}h\right)$. ∎

Note that the optimal sanction with a rent seeker law enforcer depends crucially on the share of the harm α that may hurt him/her directly. The lower this share, the lower the optimal sanction f_r, and the higher the probability of crime.

5 Comparison and discussion

Let us compare in this section the level of sanction with the different enforcer's types: utilitarian, elected and rent seeker.

Proposition 3 *Utilitarian versus elected public enforcer:* $f_h > f_u > f_c$

Proof. i) if $h > \frac{B}{2}$, then political competition yields a sanction which is larger than the social welfare maximizing one since :

$$f_h - f_u = \frac{1}{2}\left[\frac{h}{p} + \frac{B}{p}\right] - \frac{h}{p} = \frac{1}{2}\left[\frac{B}{p} - \frac{h}{p}\right]$$

and thus under assumption 1, $f_h > f_u$.
ii) if $h < \frac{B}{2}$, then political competition yields a sanction which is smaller than the social welfare maximizing one since:

$$f_c - f_u = \frac{1}{2}\frac{h}{p} - \frac{h}{p}$$

and thus $f_c < f_u$. ∎

In the "strong enforcement" equilibrium, the policy announced and implemented is more severe than that of the benevolent law enforcer. Elections reveal the preferences of the majority (which is composed by the people not committing the offenses in this case). To put it differently, under the "strong enforcement" equilibrium (where the proportion of criminals is lower than one fourth of the population), the preferences reflected in the policy chosen by the elected enforcer

are those of the honest people who are prone to accept for higher sanctions. The reverse holds under the "weak enforcement" equilibrium.

This result has to be understood hand in hand with the level of harm. The fact that the majority is composed by honest people depends on the level of harm h generated by the crime (relative to the maximum private benefits B). Recall that the honest equilibrium prevail if $h > \frac{B}{2}$ (the harm caused by the offense is large compared to its private benefits).

In each case, it is worth stressing that the decisions of an elected enforcer involve an inefficient level of deterrence, since the sanctions f_h and f_c differ from the social welfare maximizing sanction f_u. The strong enforcement equilibrium is associated with a level of deterrence which is higher than the one associated with a benevolent planer, and thus this equilibrium induces overdeterrence ($pf_h > h$ under assumption 1). In contrast, the weak enforcement equilibrium entails a level of deterrence smaller than the one associated with a benevolent planer, that is underdeterrence ($pf_c < h$ under assumption 1).

Proposition 4 *Utilitarian versus rent seeker enforcer.*
i) If $\alpha = 1$, then $f_u < f_r$.
ii) If $\alpha < 1$, the sign of $f_u - f_r$ is ambiguous; in particular, there exists $\bar{\alpha} = 2 - \frac{B}{h}$ such that $\alpha < \bar{\alpha} \Rightarrow f_u > f_r$, while $\alpha > \bar{\alpha} \Rightarrow f_u < f_r$.

Proof. We have:
$$f_u - f_r = \frac{1}{2p}[(2 - \alpha)h - B]$$

i) If $\alpha = 1$, then $f_r = f_h$ and thus $f_u < f_r$ (under assumption 1).

ii) However, if $\alpha < 1$ (the public enforcer partially bears the harm done by the offender) the sign of $f_u - f_r$ is given by the sign of $(2 - \alpha)h - B$. Hence the result. ■

When the rent seeking enforcer incurs a large share of the social harm, the society reaches an equilibrium associated with overdeterrence; as this share decreases, the level of the sanction decreases, and so does the level of deterrence. Above the threshold $\bar{\alpha}$, rent seeking is associated with overdeterrence; under the threshold $\bar{\alpha}$, it induces underdeterrence. Finally, the following result holds:

Proposition 5 *Rent seeker versus elected enforcer: $f_h \geq f_r > f_c$.*

Proof. Straightforward since $\alpha \in [0, 1]$. ■

Note that if the public enforcer entirely incurs the harm generated by the offense ($\alpha = 1$), the fine equals the one set by an elected enforcer under the honest equilibrium case $f_r = f_h$. Indeed, the rent seeker enforcer does not take into account the criminal benefits and fully bears the harm done by the offense. In such a case, there is no difference between an appointed law enforcer (an independent agency or a dictatorship) and an elected enforcer.

When it is not the case ($\alpha < 1$), the rent seeking sanction is lower than the electoral sanction under the "strong enforcement equilibrium $f_r < f_h$, but higher than the electoral sanction under the "weak enforcement" equilibrium. From the restrictive point of view of fine setting, the appointed law enforcer fares better here than the elected one, in the sense that the rent seeking sanction f_r is closer to the utilitarian sanction f_u than the sanctions under election. If $\alpha < 1$, we have $f_h > f_r, f_u > f_c$. The sign of $f_u - f_r$ is ambiguous and depends on the level of α, the share of the social harm incurred by the enforcer.

6   Concluding remarks

The central issue of our paper is the relationships between law enforcers' incentives, the revelation of social preferences, and the public enforcement of law. Since Becker (1968), the debate about the roles and objectives of the penal code has made clear that ethical and moral considerations are not enough to explain the content and structure of the penal law. At a given moment, citizens adhere to beliefs and social norms that the penal law consolidates in order for individual decisions to adhere to these norms. Those norms are revealed thanks to the electoral competition and the political process in democracies. As a result, depending on whether an act is considered as entailing either a large or a small external cost to society (as compared to its private benefit), the level of the punishment will be set accordingly at a high or low level. When the harm perception of an act evolves, the content of the penal code also changes accordingly.

The main contribution of the paper is to show that elected enforcers punish major crimes more severely than the benevolent social planer (the reverse being true for less serious crimes). This paper provides a theoretical justification for the empirical result of Lin (2007), who shows that democratic governments punish major (minor) crime more (less) severely than non democratic ones. When the harm generated by an offense is small relative to the maximal private benefit, a "weak (strong) enforcement" equilibrium should emerged, provided that the offenders (respectively, honest citizens) represent the majority.

The implications in terms of social welfare are obvious: democracy does not maximize social welfare (the social welfare is lower under democracy than in the implausible utilitarian social planer). However, our results do not suggest leaving the design of law enforcement to bureaucrats, as rent seeking behavior might also lead to suboptimal results. The comparison between deterrence with an elected and with a rent seeker law enforcer is more tricky and leads to ambiguous results. If the rent seeker public enforcer entirely bears the harm generated by the offense, he will behave as an honest individual in case of an election. The monetary sanction is as high as in the "strong equilibrium case". In the opposite case, the sanction designed by an appointed law enforcer prone to rent seeking is closer to the utilitarian sanction than the one designed

by an elected enforcer. Therefore, a significant result of our paper is that the public enforcer is doing worse in the election framework than when looking for increasing her/his rent, as in the appointment case. This result sheds a new light on institutional constraints and their consequences for offenses deterrence.

Our paper also contributes to the debate concerning the flaws of the beckerian approach, and mainly the early criticisms that focused on the inclusion of crime benefits in the social welfare function (Lewin and Trumbull, 1990), the preference shaping function of law and so on (Dau-Schmidt, 1990). According to Lewin and Trumbull (1990), including criminal benefits in the social welfare function lowers the deterrence threshold. Dau-Schmidt (1990) also argues that it is morally shocking to include criminal benefits in the social welfare function. Taking as a starting point that social preferences are revealed through the political process, our model assumes that offenders are part of the society and vote for their preferred law enforcement policy. As a result, when the "strong enforcement" equilibrium emerges, the preferences of criminals (and thus, crime benefits) are no longer taken into account to design the monetary sanctions - in a sense, in this case criminals' preferences are not representative of social preferences, since these correspond to the majority of citizens. But, it cannot be ignored that a "weak enforcement" equilibrium emerges, in which the criminals' preferences become representative of social preferences.

Our paper also provides an explanation for the paradox of crime deterrence: on the one hand, the issue of criminality became a main concern in electoral campaigns for more than a decade in most European countries; on the other hand, there is an ongoing debate about the non criminalization/legalization of some offenses, such as drug consumption (except in relation with international traffics and criminal networks) or illegal downloading. In the first case, the growing place of crime deterrence in electoral campaigns can be seen as a consequence of the election strategies of the politicians, anticipating the "strong enforcement" equilibrium for major crimes. In the second case, some offenses such as drug consumption or burglary might be considered as minor relatively to their private benefits (the evaluation of those depending on cultures or countries).

A limitation of our paper is the quite strong assumption on the commitment of elected law enforcers to enforce their electoral platform. Here, we deal with pre-election politics, and assume that electoral promises are binding and enforceable. A significant extension would be to study the case where politicians could decide not to implement the announced policy despite reelection concerns. Furthermore, we also abstract from the existence of lobbying activities that yield other kinds of imperfections on the political market. We leave for future research the analysis of public enforcement when industry pressures exist, which will allow to study the effects of different assumptions departing from the one of a benevolent enforcer.

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Appendix

Using the analysis of paragraph 2.1, it is straightforward that the deterrence threshold at equilibrium is $\bar{b} = pf$, and the probability that citizens be honest is $\frac{\bar{b}}{B} = \frac{pf}{B}$.

Moreover, it is straightforward that honest people, thereafter characterized with the subscript h, prefer a monetary sanction which is set at a higher level than the citizens who commit a crime/offense (criminals) henceforth denoted with the subscript c, since according to the definition of their respective satisfaction levels, we have for an honest individual $u_h = w - t - \left(1 - \frac{\bar{b}}{B}\right) h$ and thus:

$$\frac{\partial u_h}{\partial f} = \frac{\partial \left(\frac{\bar{b}}{B}\right) h}{\partial f} = \frac{ph}{B} > 0$$

while for a criminal, we have $u_c = w + b - t - pf - \left(1 - \frac{\bar{b}}{B}\right) h$ such that:

$$\frac{\partial u_c}{\partial f} = -p + \frac{\partial \left(\frac{\bar{b}}{B}\right) h}{\partial f} = -p(1 - \frac{h}{B}) < 0$$

under assumption 1.

These two populations due to their different attitudes regarding the law, also have different preferences regarding the strategy of vote at the electoral competition stage. For an honest individual, we define now the preferred sanction as: $f_h = \arg\max_f \{u_h\}$ under the public budget constraint defined by (1) [and f lower than w]. Substituting (1) in u_h leads now to:

$$u_h = w - m(p) + \left(1 - \frac{pf}{B}\right)(pf - h)$$

Note that $\frac{\partial u_h}{\partial f}_{|f=0} = p + \frac{p}{B}h > 0$. Assuming that $\frac{\partial u_h}{\partial f}_{|w} < 0 \Leftrightarrow w > \frac{1}{2}\left[\frac{h}{p} + \frac{B}{p}\right]$, the first order condition is given by: $\frac{\partial u_h}{\partial f} = 0$ or:

$$-\frac{1}{B}(pf - h) + \left(1 - \frac{pf}{B}\right) = 0$$

hence solving for f_h:

$$f_h = \frac{1}{2}\left[\frac{h}{p} + \frac{B}{p}\right]$$

Furthermore, the proportion of honest people is larger than the proportion of criminals when $f_h = \frac{1}{2}\left[\frac{h}{p} + \frac{B}{p}\right]$:

$$\frac{\bar{b}_h}{B} = \frac{pf_h}{B} = \frac{1}{2}\left[\frac{h}{B} + 1\right] > \frac{1}{2}$$

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For a criminal, let us denote: $f_c = \arg\max_f \{u_c \text{ under } (1)\}$.
Substituting (1) in u_c yields:

$$u_c = w + b - m(p) - pf + \left(1 - \frac{pf}{B}\right)(pf - h)$$

Note that $\frac{\partial u_c}{\partial f}_{|f=0} = \frac{p\sigma}{B}h > 0$. Assuming that $\frac{\partial u_h}{\partial f}_{|w} < 0$, the first order condition $\frac{\partial u_c}{\partial f} = 0$ writes:

$$-1 - \frac{1}{B}(pf - h) + \left(1 - \frac{pf}{B}\right) = 0$$

which yields:

$$f_c = \frac{1}{2}\frac{h}{p}$$

Furthermore, under assumption 1, the proportion of honest people under f_c is lower than the proportion of honest people under f_h :

$$\frac{\bar{b}_c}{B} = \frac{pf_c}{B} = \frac{1}{2}\frac{h}{B} < \frac{1}{2}$$

and it is straightforward that $f_c < f_h$ and that $\frac{\bar{b}_c}{B} < \frac{1}{2} < \frac{\bar{b}_h}{B}$. This result is used to establish the:

Proof of proposition 1
Note first that the fraction of voters for f_h is $\frac{\bar{b}_h}{B} > \frac{1}{2}$, while the fractions voting for f_c is $1 - \frac{\bar{b}_c}{B} > \frac{1}{2}$. Then, it is easy to verify that:

$$\frac{\bar{b}_h}{B} - \left(1 - \frac{\bar{b}_c}{B}\right) = \frac{h}{B} - \frac{1}{2}$$

and thus, (recall that $B > h$)

$$h > \frac{B}{2} \Rightarrow \frac{\bar{b}_h}{B} > \left(1 - \frac{\bar{b}_c}{B}\right)$$

$$h < \frac{B}{2} \Rightarrow \frac{\bar{b}_h}{B} < \left(1 - \frac{\bar{b}_c}{B}\right)$$

$$h = \frac{B}{2} \Rightarrow \frac{\bar{b}_h}{B} = \left(1 - \frac{\bar{b}_c}{B}\right)$$

CASE 1: $\frac{h}{B} - \frac{1}{2} > 0$.
At the electoral competition stage, note first that both candidates anticipate that, once the elections are held (i.e. considering any subgame beginning once a platform f is implemented), the enforced law f will split the population in two sub-groups: citizens who abide the law, and citizens who commit a crime/offense. Secondly, a situation where the candidates announce a different

platform $f_l \neq f_r$ cannot be an equilibrium, since either the distribution of voters satisfies $n_l > n_r$ and thus candidate r would change his platform, otherwise he looses the elections for sure; or on the contrary, the associated distribution satisfies $n_l < n_r$, and now candidate l has an incentive to make a different announcement. Thus, any subgame perfect equilibrium must be such that both candidates choose and announce the same programme: $f_l = f_r = f$ and both have a 50% chances to win the elections.

Given that $f_h = \frac{1}{2}\left[\frac{h}{p} + \frac{B}{p}\right]$ is maximizing the number of voters: $\frac{1}{2}\left[\frac{h}{B} + 1\right] > \frac{1}{2}$, the unique subgame perfect equilibrium is associated with the announcement by both candidates of the monetary sanction f_h, such that $\frac{\bar{b}_h}{B} > \left(1 - \frac{\bar{b}_c}{B}\right)$.

CASE 2: $\frac{h}{B} - \frac{1}{2} < 0$.

According to the same argument, any subgame perfect equilibrium must be such that both candidates choose and announce the same programme: $f_l = f_r = f$, and both have a 50% chances to win the elections. Given that $f_c^a = \frac{1}{2}\left[\frac{h}{p} + \frac{B}{p}\right]$ is now maximizing the number of voters: $\left(1 - \frac{1}{2}\frac{h}{B}\right) > \frac{1}{2}$, the unique subgame perfect equilibrium is associated with the announcement by both candidates of the monetary sanction f_c, such that $\frac{\bar{b}_h}{B} < \left(1 - \frac{\bar{b}_c}{B}\right)$.

CASE 3: $\frac{h}{B} - \frac{1}{2} = 0$. Whatever the annoucement, f_h or f_c, the associated probability of voters is $\frac{1}{2}\left[\frac{h}{B} + 1\right] = \frac{3}{4}$. Thus there exist four kinds of equibria: (f_h, f_c) ; (f_h, f_h) ; (f_c, f_h) ; (f_c, f_c).